

**Monthly Progress Report**  
**Corrective Measures Study (CMS) for Potential Release Site (PRS) 16-021(c)**  
**January 2002**

This report summarizes Los Alamos National Laboratory (LANL) activities completed during January of fiscal year (FY) 2002 on the CMS for PRS 16-021(c), the 260 outfall. Both the activities described in the CMS plan ([LA-UR-98-3918]), which was submitted to the New Mexico Environment Department-Hazardous Waste Bureau [NMED-HWB] on 9/30/98, and approved by NMED-HWB on 9/8/99), and other related activities are described herein.

**Description of Activities and Contacts**

***High Performing Team (HPT) Activities*** – The 260 HPT met on January 14, 2002. Topics discussed included: 1) an update on ongoing TA-16-260 CMS activities; 2) ecological risk results; and 3) a review of the data quality objectives (DQOs) from the CMS Addendum.

The status of the CdV-R-37-2 well, the Interim Measure, and the CMS sampling were updated (see detailed discussion in the December CMS Progress Report and below).

Mark Tardiff (Neptune) reviewed the poster that he had presented at the recent Society of Risk Assessors conference. Many of these results had been presented to the 260 and ecorisk HPTs previously. Low levels of impact to terrestrial biota in Canon de Valle were seen, relative to a reference canyon. New results presented included transfer factors for metals from soil to biota. These were higher than those predicted based on empirical models.

The HPT reviewed the DQOs for drilling that had been presented in the CMS Addendum. Key outstanding DQOs are 1) to better determine the extent of the contaminated perched zone that was observed in R-25; 2) to identify the hydrologic gradients in that zone; and 3) to provide locales in which to sample in support of a potential monitored natural attenuation (MNA) remedy. It was suggested that geophysical sounding might be used to help locate potential drill holes. The team agreed that LANL should further discuss and refine DQOs for such wells, continue to interact with the HPT on their location, and provide a modification, perhaps in letter form, to the CMS Addendum, which remains unapproved by NMED.

The next HPT meeting is scheduled for Monday February 11, 2002. Agenda items may include a data update, an update on ITRD, and a discussion of the RFI and CMS Reports.

***RCRA Facility Investigation (RFI) Report and CMS Plan***– No new activities occurred during this reporting period.

**Best Management Practices (BMPs)**– BMPs are inspected quarterly and following significant precipitation events. Due to low levels of precipitation in January, no BMP repairs were required.

**CMS Hydrogeologic Investigations**–CMS hydrogeologic investigations include ongoing Phase II RFI sampling as well as continuing investigations outlined in the CMS plan.

The ongoing Phase II RFI sampling program includes collecting samples at Martin and Burning Ground spring every other day for stable isotopes

The wells, both alluvial and deep, were checked for both presence and level of water. Four out of five alluvial wells in Canon de Valle contained water, the uppermost well was dry. No water was present in all three alluvial wells in Martin Spring Canyon. All of the intermediate depth boreholes were dry.

Three samples from precipitation events were collected and archived for analysis during this reporting period.

For well CdV-R-15-3, a round of quarterly sampling was completed. The three regional aquifer screens contained water. The vadose zone screens were dry.

For well CdV-R-37-2, the well completion fact sheet was completed and submitted to NMED. Samples were selected for geological, petrologic, and mineralogic characterization. The first round of quarterly sampling was completed. The three screens in the regional aquifer were sampled; the screen in the vadose zone was dry. The water samples were yellowish in color and exhibited an organic odor.

### ***Ecological Risk Pilot***–

Data analysis continued.

**CMS Bench and Pilot Studies**–Bench and pilot studies continued in collaboration with the Innovative Treatment Remediation Demonstration (ITRD) Program. The ITRD HE program is focused on two DOE sites: LANL and Pantex. Studies include:

1. A study of the passive barrier technology of Stormwater Management, Inc., which is potentially useful for removing HE and barium from waters.
2. A study of chemical treatment of HE-contaminated soil using zero-valent iron (ZVI). The LANL portion of this study has been completed.
3. At Pantex, a study of in situ anaerobic bioremediation of HE using gas-phase carbon additions.
4. A study of ex situ anaerobic bioremediation of HE-contaminated soils using the W. R. Grace process, which combines anaerobic bioremediation with a ZVI treatment. The LANL portion of this study has been completed.

5. A study of HE composting. Amendments appropriate to northern New Mexico were tested on both clean and contaminated soils. The LANL portion of this study has been completed.
6. A study of immobilization of barium-contaminated sediments from Cañon de Valle. A preliminary study has been completed and further investigations are planned for FY 02.
7. Phytoremediation studies in Cañon de Valle. Native plants are being evaluated for their ability to remove HE from surface waters. Preliminary results suggest that low levels of phytoremediation are occurring in the Burning Ground spring area.
8. Oxidation, reduction, and in-situ bioremediation studies of groundwater contamination at Pantex.

Initial discussion was initiated on the study design for the immobilization study.

#### ***Interim Measure (IM) –***

The IM Report is being written by the subcontractor. An internal rough draft is being reviewed by the HEPS Team.

***Public and Stakeholder Involvement***– No activities

#### **Percentage of CMS Completed**

LANL estimates 85 % of the CMS has been completed to date. Note that this percentage does not reflect the deep and potential intermediate wells that will be drilled per the CMS plan addendum.

#### **Problems Encountered/Actions to Rectify Problems**

*General Problem (1)* The Cerro Grande fire has severely impacted the 260 RFI/CMS activities. These problems have been discussed in detail in previous monthly reports.

*Action to Rectify General Problem (1):* LANL will work closely with NMED through the HPT to mitigate the effects of the Cerro Grande fire. Effects of the fire on the monitoring data in Canon de Valle continue to be addressed.

#### ***CMS Hydrogeologic Investigations***

*Problem (1):* Questions relating to the quality of data from well R-25 remains a concern to the TA-16-260 team.

*Action to Rectify Problem (1):* LANL will evaluate the data from the quarterly sampling of the R-25 well to evaluate its reliability.

### ***CMS Bench and Pilot Studies***

*Problem (1):* The fact that the Stormwater Management unit does not appear to be removing barium is of concern,

*Action to Rectify Problem (1):* LANL will work with ITRD to determine if there are problems with the barium-specific resin and will potentially evaluate other barrier materials.

### ***IM***

None.

### **Key Personnel Issues**

None

### **Projected Work for February 2002**

#### ***RFI Report and CMS Plan***

- Discussion will be held on modifying the CMS Addendum to address intermediate depth boreholes.

### ***BMPs***

- Inspection of existing BMPs following significant precipitation events will continue.

### ***CMS Hydrogeologic Investigations***

- Maintenance of autosamplers
- Checking for levels and presence of water in alluvial and deep wells.
- Sampling of flow-integrated autosamplers
- Continued precipitation monitoring and sampling for stable isotopes.
- Data analysis
- Mineralogic, petrologic and chemical characterization of samples from CdV-R-37-2
- Review of data quality objectives for groundwater modeling

- Review of data quality objectives for drilling

#### ***Ecological Risk Pilot***

- Evaluation of data from ecotoxicity samples

#### ***CMS Bench and Pilot Studies***

- Evaluation of data from Stormwater units

#### ***IM***

- Data analysis and writing of IM Report

#### ***Public and Stakeholder Involvement***

None